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10/575,739	02/05/2007	James Austin	920670-103034	9418
23644	7590	02/25/2009	EXAMINER	
BARNES & THORNBURG LLP P.O. BOX 2786 CHICAGO, IL 60690-2786				CHAWAN, SHEELA C
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Patent-ch@btlaw.com

<i>Office Action Summary</i>	Application No.	Applicant(s)
	10/575,739	AUSTIN ET AL.
	Examiner	Art Unit
	SHEELA C. CHAWAN	2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 10 April 2006.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20, 22- 23, 25-26 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-20, 22- 23, 25-26 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 10 April 2006 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Preliminary Amendment

2. Preliminary amendment filed on 4/10/06 has been entered.

Claim Objections

3. Claims 1, 10, 22, 23, 25 and 26 are objected to because of the following informalities:

In claim 1, line 1, change “recognising” to -- recognizing --.

In claim 10, line 2, change “normalising” to -- normalizing --.

In claim 22, line 1, change “recognising” to -- recognizing --.

In claim 23, line 1, change “recognising” to -- recognizing --.

In claim 25, line 1, change “recognising” to -- recognizing --.

In claim 26, line 1, change “recognising” to -- recognizing --.

Appropriate correction is required.

Specification

4. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in

upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Drawings

5. The drawings are objected to because drawings in (figs 1- 4) are insufficient in quality for examination.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

6. 112, 2nd Paragraph:

Products (e.g., machines and manufactures) must distinguish over the prior art in terms of their structure (or structure + structure's function when claimed functionally) rather than function alone (MPEP 2114). Therefore, an "apparatus" that has no structural limitations at all violates 112, 2nd paragraph, in that it fails to "particularly point out and distinctly claim ...".

7. 112, 1st Paragraph – Single Means Claim:

A single claimed structural element that performs a multitude of functions, where the functions are disclosed as being performed by separate structural elements violates the 112, 1st paragraph enablement requirement. That is, a single means claim which covered every conceivable means for achieving the stated purpose was held nonenabling for the scope of the claim because the specification disclosed at most only those means known to the inventor (In re Hyatt, 708 F.2d 712, 714-715, 218 USPQ 195, 197 (Fed. Cir. 1983)).

The same rationale (enablement) applies even when the claim is not in a "means plus function" format.

Therefore, I'd suggest (for your convenience) use of the following form paragraph to address both issues "at one fell swoop".

Claims 23 is rejected under 35 U.S.C. 112 first and second paragraphs as attempting to define a product (i.e., machine or apparatus) entirely by virtue of its function, in the absence of any recited structure.

Products must distinguish over the prior art in terms of their structure (or structure + structure's function when claimed functionally) rather than function alone (MPEP 2114). Therefore, an "apparatus" not having structural limitations fails to "particularly point out and distinctly claim ..." the invention in accordance with 35 U.S.C. 112, 2nd paragraph.

Furthermore, while the specification disclosure may be enabling for a plurality of structural elements performing the claimed functions [1], the specification does not reasonably provide enablement for a single structural element (or no structural elements) performing all of the claimed functions. That is, given the claim in question, the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims ("A single means claim, i.e., where a means recitation does not appear in combination with another recited element of means, is subject to an undue breadth rejection under 35 U.S.C. 112, first paragraph" because a single means claim covers "every conceivable means for achieving the stated purpose" and "the specification disclosed at most only those means known to the inventor" - *MPEP, at paragraph 2164.08(a)*).

Applicant is advised to define the apparatus by virtue of the individual structural element that serve to perform the individual functions recited in the corresponding method claim.

[1] Even when an apparatus is disclosed as being computer implemented (e.g., software implemented on hardware), the requirement remains that there be some structure recited in the body of the claim (e.g., a processor and a memory storing a program which when implemented performs the method steps). For purposes of “means plus function” language, individual disclosed steps corresponding to computer program elements operating on a processor (e.g., inputting, filtering, detecting and resolving) may be considered as separate means (*Dossel*, 115 F.3d at 946–47, 42 USPQ2d at 1885).

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-20, 23 and 25 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory “process” under 35 U.S.C. 101 must (1) be tied to a machine or (2) transform underlying subject matter (such as an

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

article or material) to a different state or thing. While the instant claims recite a series of steps or acts to be performed, the claims neither transform underlying subject matter nor are positively tied to another statutory category that accomplishes the claimed method steps, and therefore does not qualify as a statutory process. The recited steps of "recognizing an image, processing image, combining the processed images , transforming the data space, generating, comparing the image key " neither transform underlying subject matter nor positively tie to a machine that accomplished the claimed method steps. In order for process to be "tied" to a machine, the structure of a machine should be positively recited in a step or steps significant to the basic inventive concept, and NOT just in association with statements or intended use or purpose, insignificant pre or post solution explicitly, or implicitly.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 -7, 11, 12 -14, 17-20 and 22 - 23, are rejected under 35 U.S.C. 102(e) as being anticipated by Eraslan (US.6, 801,641 B2).

As to claim 1, Eraslan discloses a method of recognizing an image, comprising the steps of:

- a. processing the image to provide an image set containing a plurality of different processed images (note, an image data set containing several images stored in either JPEG, GIF, or TIF formats, column 11, lines 34-61);
- b. combining the processed images in the image set (note, the processed images are stored as a set of images of facial features, column 12, lines 20- 53);
- c. transforming the data space occupied by the processed images in the image set (note, the data base of facial features is stored as a set and the space (memory, column 13, lines 16- 18);
- d. generating, from the image-set represented in the transformed data space, an image key representative of the image (note, the composite code (image key) is generated to define a particular face, column 13, lines 49- 55) ; and
- e. comparing the image key with at least one previously stored image key of a known image (note, comparing the composite code with the composite code of the data base to match an image).

As to claim 2, Eraslan discloses a method according to claim 1, wherein step a. includes extracting image features including at least one of edges, lines, wavelets, gradient components, curvature components and color components (column 12, lines

48- 52, feature are extracted features such as outlines, surface features also see column 12, lines 3-19) .

As to claim 3, Eraslan discloses a method according to claim 1, wherein step b. is carried out prior to step c (column 12, lines 54- 56).

As to claim 4, Eraslan discloses a method according to claim 1, wherein step c. is carried out prior to step b (the steps b and c can be carried out in a reverse order also, column 12, lines 56-59).

As to claim 5, Eraslan discloses a method according to claim 1, wherein step e. comprises comparing the image key with just one previously stored image key, to verify the identity of the image (note, composite code (image key) is compared with a composite code of a stored image).

As to claim 6, it is interpreted and thus rejected for the same reasons as applied above in the rejection of claim 5.

As to claim 7, Eraslan discloses a method according to claim 6, comprising the further step of sorting the results of the comparison in step e. to produce a list of potential matches with previously stored image keys (column 14, lines 7-10, the potential matches are identified after initial comparison of composite codes).

As to claim 11, Eraslan discloses a method according to claim 1, wherein said image is obtained from a camera (note, photographs (images are taken by camera)).

As to claim 12, Eraslan discloses a method according to claim 1, wherein said image comprises 3D data (fig 33, element 3212, column 11, lines 43-44).

As to claim 13, Eraslan discloses a method according to claim 1, wherein said image comprises 2D data (fig 33, 3210 mug shots are 2D photos, column 11, lines 45-47).

As to claim 14, Eraslan discloses a method according to claims 12, wherein said image comprises a registered 2D-3D image pair (fig 33, 3210, 3212, are stored in the same location these are in the database 3208, column 3, lines 7-10, column 11, lines 41-44) .

As to claim 17, Eraslan discloses a method according to claim 1, wherein said image is an image of a face (column 3, lines 5-10).

As to claim 18, it is interpreted and thus rejected for the same reasons as applied above in the rejection of claim 17.

As to claim 19, it is interpreted and thus rejected for the same reasons as applied above in the rejection of claim 17.

As to claim 20, it is interpreted and thus rejected for the same reasons as applied above in the rejection of claim 17.

As to claim 22, Eraslan discloses apparatus for recognizing an image (fig 33, element 3206), the apparatus comprising:

a. processing means arranged to process the image to provide a plurality of different processed images (note, an image data set containing several images stored in either JPEG, GIF, or TIF formats, column 11, lines 34-61, fig 33, 3206, local computer with operating software);

b. combining means arranged to combine the processed images (note, the processed images are stored as a set of images of facial features, column 12, lines 20-53);

c. reducing means arranged to reduce the data space occupied by the processed images (note, the data base of facial features is stored as a set and the space (memory, column 13, lines 16- 18);

d. generating means arranged to generate from the combined and reduced processed images an image key representative of the image(note, the composite code (image key) is generated to define a particular face, column 13, lines 49- 55) ; and

e. comparison means arranged to compare the image key with at least one previously stored image key of a known image(note, comparing the composite code with the composite code of the data base to match an image, column 13, lines 13- 55).

As to claim 23, it is interpreted and thus rejected for the same reasons as applied above in the rejection of claim 1.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 8 and 9,10, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eraslan (US.6, 801,641 B2), as applied to claims 1 - 7, 11,12 -14, 17-20 and 22 - 23 above and further in view of Liu et al., (US. 2003/0086593 A1).

Eraslan discloses three dimensional face identification system. Eraslan is silent about using a Euclidean distance metric (the L2 norm), mahalanobis distance metric or a cosine distance metric.

Liu discloses a novel Gabor feature classifier for face recognition. The system comprises of using a Euclidean distance metric (the L2 norm), mahalanobis distance metric or a cosine distance metric (paragraph 0073, 0076).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Eraslan to include a Euclidean distance metric (the L2 norm), mahalanobis distance metric or a cosine distance metric. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Eraslan by the teaching of Liu in which the similarity measures are used in

experiments in order to evaluate the efficiency of different representation and recognition method as suggested by Liu at paragraph 0073)

As to claim 9, Liu discloses a method according to claim 1, including the step prior to step a. of rotating and/or positioning the image to a predetermined orientation and/or position and/or depth normalization (paragraph 0037,0039, 0042).

As to claim 10, Liu discloses a method according to claim 1, including a step prior to step b. of normalising data prior to combination (paragraph 0037, 0039, 0042).

As to claim 15, Liu discloses a method according to claim 1, wherein step c. is carried out by a Principal Component Analysis method (paragraph 0051, 0052, 0053, 0054, 0056, 0057).

As to claim 16, Liu discloses a method according to claim 1, wherein step c. is carried out by Fisher's Linear Discriminant Analysis method (paragraph 0051, 0052, 0053, 0054, 0056, 0057).

11. Claims 25 and 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eraslan (US.6, 801,641 B2) in view of Liu et al., (US. 2003/0086593 A1).

Regarding claim 25 Eraslan discloses a method of recognising a three-dimensional image, comprising the steps of:

b. generating, from the image-set represented in the transformed data space, an image key representative of the image (note, the composite code (image key) is generated to define a particular face, column 13, lines 49- 55) ; and

c. comparing the image key with at least one previously stored image key of a known image (note, comparing the composite code with the composite code of the data

base to match an image). Eraslan is silent about a. transforming the data space occupied by the image using Fisher's Linear Discriminant Analysis.

Liu discloses a novel Gabor feature classifier for face recognition. The system comprises of a. transforming the data space occupied by the image using Fisher's Linear Discriminant Analysis (paragraph 0036, 0057).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Eraslan to include a Fisher's Linear Discriminant. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Eraslan by the teaching of Liu for the very purpose of achieving high separability between the different patterns in whose classification one is interested (as suggested by Liu at paragraph 0057)

Regarding claim 26, it is interpreted and thus rejected for the same reasons as applied above in the rejection of claim 25.

Other prior art cited

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Steffens et al., (US.6,301,370 B1) discloses face recognition from video images.

Blanz et al., (US. 6,556,196 B1) discloses method and apparatus for the processing of images.

Yang (US. 7,054,468 B2) discloses face recognition using kernel fisherfaces.

Lestideau (US. 7,352,881 B2) discloses method for tracking facial features in a video sequence.

Eckes et al., (US.7,113641 B1) discloses method for recognizing object in digitized images.

Contact Information

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHEELA C. CHAWAN whose telephone number is (571)272-7446. The examiner can normally be reached on 7.30- 5.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on 571-272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)? If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sheela C Chawan/

1/20/09

Primary Examiner, Art Unit 2624

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